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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/690,595	10/17/2000	Michael O. Okoroafor	1636A1	2590
24959	7590	06/01/2007	EXAMINER	
PPG INDUSTRIES INC			PENG, KUO LIANG	
INTELLECTUAL PROPERTY DEPT				
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PITTSBURGH, PA 15272			1712	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	09/690,595	OKOROAFOR ET AL.
	Examiner	Art Unit
	Kuo-Liang Peng	1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 8/24/06 Amendment.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-97 is/are pending in the application.
- 4a) Of the above claim(s) 56-93, 96 and 97 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-23, 25-55 and 94 is/are rejected.
- 7) Claim(s) 7-12, 24-54 and 95 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/15/02.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

1. The Applicants' amendment filed August 24, 2006 is acknowledged. Claims 1, 3-4, 6, 8-10, 14-15, 23-25, 27-33, 37-38, 46 and 94-95 are amended. Claims 56-93 and 96-97 are withdrawn.
2. Applicant's election with traverse of Claims 1-55 and 94-95 in the response to restriction requirement filed on August 24, 2006 is acknowledged. The traversal is on the ground(s) that the search for subject matter recited in the claims of Group I would necessarily retrieve the subject matter recited in the claims of Group II. As such, no serious burden imposed on Examiner. This is not found persuasive because of the reason set forth in the previous Office action. Furthermore, after the amendment, the subject matter of Group I is not exactly the same as that of Group II. Therefore, Claims 56-93 and 96-97 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. The requirement is still deemed proper and is therefore made FINAL.
3. Examiner will reconsider the aforementioned restriction requirement provided that a) the subject matter of Group I is later found to be in condition for allowance and b) Group II recites the patentable subject matter of Group I. Now, Claims 1-55 and 94-95 are pending for consideration.

Claim Objections

4. Claims 6-12 and 25-54 are objected to because of the following informalities:

In Claim 6 (page 4, line 6), should “reactive hydrogen” be removed because a) the species recited thereafter are clearly reactive hydrogen materials; and b) it causes confusion as the other term of “reactive hydrogen” is also recited in page 4, line 1.

In Claim 7, the structure of the general formula (B) contains an improper amino group.

In Claim 25 (line 7), should “teh” be -- the --?

In Claim 31 (line 1), should “30” be -- 29 --?

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. Claims 6-12 and 29-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 6 (page 4, lines 8-10), “compounds having one or more thiol groups and one or more hydroxyl groups, and mixtures thereof” causes confusion

because both the compounds having one or more thiol groups and the compounds having one or more hydroxyl groups appear to be redundant as a polythiol monomer and a reactive hydrogen material containing hydroxyl groups have already recited in page 4, lines 5-8.

In Claim 29, the same issue as in Claim 6 above exists.

Claim Rejections - 35 USC § 102 and 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 11-12, 18, 21, 25-28, 34-35, 41, 44, 46-48 and 50-55 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Miranda (US 3 600 359).

For Claims 1-3, 5, 11-12, 18, 21, 25-28, 34-35, 41, 44, 46-48 and 50-55, Miranda discloses a polymerizate derived from a polymerizable organic composition comprising a acrylate monomer containing at least one acryloyl

groups and thiourethane linkages as described in col. 2, line 28, wherein n is more than 1 (col. 2, lines 44-45), such as 2, 3, or 4 (col. 3, line 41). Miranda is silent on the claimed refractive index, initial Barcol hardness, Abbe number, etc. of the polymerizate. However, as the reference discloses all the limitations of a claim except a property or function, and the examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention but has basis for shifting the burden of proof to applicant as in *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980). In addition to the acrylate monomer, Miranda further teaches the use of vinyl pyrrolidone which reads on Applicants' monoethylenically unsaturated monomer b-i). Miranda further teaches that the acrylate monomer is prepared by reacting a polythiol monomer as described in col. 2, line 14 wherein n is more than 1 (col. 2, lines 44-45), such as 2, 3, or 4 (col. 3, line 41) with a diisocyanate (col. 2, line 17). Miranda further teaches the use of n moles of the diisocyanate to react with 1 mole of polythiol which containing n moles of thiol groups (col. 2, lines 14-16). In other words, the molar ratio of NCO group to SH group is 2.0. Miranda further teaches the use of polythiols such as trimethylolpropane tris(mercaptopropionate), pentaerythritol tetrakis(mercaptopropionate), trimethylolpropanol tris(thioglycolate), etc. (col. 3, lines 20-43 and Examples). Miranda further teaches

a polymerizate prepared by the acrylate monomers, styrene, etc. (col. 4, lines 59-75 and Examples). Miranda further teaches a polymerizate prepared by the acrylate monomer in the presence of pyrrolidone (Example 2). Miranda further teaches the use of the composition as cured coatings for exterior sidings and for ceiling tiles (col. 6, lines 63-72). As such, the coated product is a shaped article. Since the composition can be applied on an exterior surface, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include therein a light stabilizer, UV absorber, etc. in a desired amount for a proper UV/light protection. Miranda's composition can be cured by free radical polymerization. (col. 1, lines 60-71)

For Claim 4, Mirada is silent on the claimed process of making the first monomer. However, the instant claim is a product-by-process claim. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). "The Patent Office bears a lesser burden of proof in making out a case of *prima facie*

obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) "[T]he lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

8. Claims 6 and 29 are rejected under 35 U.S.C. 102(b) as anticipated by Miranda.

Miranda discloses a polymerizate derived from a polymerizable organic composition comprising a acrylate monomer containing at least one acryloyl groups and thiourethane linkages as described in col. 2, line 28, wherein n is more than 1 (col. 2, lines 44-45), such as 2, 3, or 4 (col. 3, line 41). In addition to the acrylate monomer, Miranda further teaches the use of vinyl pyrrolidone which reads on Applicants' monoethylenically unsaturated monomer. Miranda further teaches that the acrylate monomer is prepared by reacting a polythiol monomer as described in col. 2, lines 14-27 where n is more than 1 (col. 2, lines 44-45), such as 2, 3, or 4 (col. 3, line 41) with a diisocyanate (col. 2, line 17). Miranda further teaches the use of n moles of the diisocyanate to react with 1 mole of polythiol which containing n moles of thiol groups (col. 2, lines 14-16). Miranda further teaches the use of polythiols such as trimethylolpropane tris(mercaptopropionate), pentaerythritol tetrakis(mercaptopropionate), trimethylolpropanol tris(thioglycolate), etc. (col. 3, lines 20-43 and Examples).

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9. Claims 1-3, 5-6, 11-23, 25-29, 34-45, 47, 50-55 and 94 are rejected under 35 U.S.C. 102(b) as anticipated by Kobayashi (US 5 916 987).

For Claims 1-3, 5-6, 11-17, 19-23, 25-29, 34-45, 47, 50-55 and 94, Kobayashi discloses a polymerizate derived from a composition comprising a sulfur-containing O-(meth)acrylate compound represented by formula (1) containing thiourethane linkages. (col. 2, line 1 to col. 3, line 7) The refractive index and Abbe number of the polymerizate are exemplified in Examples. Comonomers can be used. (col. 7, line 9 to col. 8, line 39 and Examples) The molar equivalent ratio of NCO/SH is exemplified in Examples. Isocyanate compounds containing one or more sulfur atoms in its backbone can be used. (col. 6, lines 8-34) Additives such as UV absorbers, anti-coloring agents, etc. can be used. (col. 9, lines 32-35) Polymerization initiators can be incorporated into the composition. (col. 8, lines 40-67) Articles such as lenses can be made of the polymerizate. (col. 9, lines 39-50) For Claim 18, polythiol compounds described in col. 7, line 62 to col. 8, line 19 can be present.

10. Claims 4 and 46 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kobayashi.

Kobayashi discloses a polymerizate derived from a composition, *supra*, which is incorporated herein by reference.

For Claim 4, Kobayashi is silent on the claimed process of making the first monomer. (col. 3, lines 8-26) However, the instant claim is a product-by-process claim. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). "The Patent Office bears a lesser burden of proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) "[T]he lack of

physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

For Claim 46, Kobayashi is silent on the claimed initial Barcol hardness. Since the reference discloses all the limitations of a claim except a property or function, and the examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention but has basis for shifting the burden of proof to applicant as in *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980).

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11. Claim 48 is rejected under 35 U.S.C. under 35 U.S.C. 103(a) as obvious over Kobayashi.

Kobayashi discloses a polymerizate derived from a composition containing additives such as UV absorbers, anti-coloring agents, *supra*, which is incorporated herein by reference. Kobayashi is silent on the amount of the additives. However, the amount thereof will affect the durability of the polymerizate. In other words, the amount is a Result-Effective variable. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the additives in whatever amount through routine experimentation in order to afford a polymerizate with desired properties. Especially, Applicants do not show the criticality of the amount. See MPEP 2144.05 (II).

12. Claim 49 is rejected under 35 U.S.C. under 35 U.S.C. 103(a) as obvious over Kobayashi in view of Kwak (US 4 816 584).

Kobayashi discloses a polymerizate derived from a polymerizable composition, *supra*, which is incorporated herein by reference. Kobayashi further teaches lenses for eyeglasses and cameras prepared from the composition. (col. 9, lines 39-57) Kobayashi is silent on the use of a photochromic substance. However, Kwak teaches the use of a photochromic substance in a plastic lens. The

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motivation is to impart a photochromic response to the lens. (Abstract and col. 1, lines 15-38) In light of the benefit, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate a photochromic substance into Kobayashi's composition.

13. Claims 24 and 95 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. Claims 7-10 and 30-33 would be allowable if rewritten to overcome the claim objection and the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang Peng whose telephone number is (571) 272-1091. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

klp
May 28, 2007



Kuo-Liang Peng
Primary Examiner
Art Unit 1712